Open Access Journal of Gynecology and Obstetrics

Volume 1, Issue 1, 2018, PP 09-12

Placental Alterations and Breast Cancer Development Still a Myth?

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Abstract

According to recent bibliography, hormonal production is strongly accompanied with pregnancy and childbirth leading to breast cancer development. Not only placental weight but also similar placental deformations conduct such hypothesis.

Based on epidemiological evidence placenta mass has been indicated to affect breast cancer mortality. Additionally, childbirth leads to a short-term period of reduced breast cancer risk, which is followed by permanent risk reduction that spans through lifetime.

The aim of our study is to present the impact of placenta deformations and breast cancer development. We think that through our study, unique in greek literature, this scientific path will be accessible.

Keywords: Hormones, breast cancer, placenta weight

Introduction

The definition of cancer varies among people, gender, countries and especially social economical standard.

Despite numerous shorts of malignancy, neoplasmatic lesion is strongly correlated with wild and unexpected cell development. [1] Breast cancer represents the most common cause of death among women in the U.S, primary localized in breast cells. [2] Tumor spread, lymphatic infiltration, cluster of differentiation, histologic type could be prognostic factors. Proper diagnosis and assiduous therapeutic mapping consist conditions of successful treatment.

Evaluated danger of breast cancer development is correlated with patient age. (Table I.) In United States, breast cancer represents 29% of all diseases, accounting the second place after lung cancer among malignancy causes.[3] Physical examination can reveal breast size or skin alterations (thickening, swelling, peau d'orange), late areola reversal or other areola anomalies (ulceration, withdrawal, or unconstrained grisly release) and also bloodstained areola release.

Table I. *Correlation of breast cancer development and age of the patient*

Age of the patient	*Evalutated breast cancer danger risk*
29	1 in 2000
39	1 in 315
49	1 in 50
59	1 in 22
69	1 in 13
Lifetime hazard	1 in 8

Vulnerability to breast cancer development is indirectly linked with pregnancy.[4] Estrogens, prolactin, progesterone, insulin-like growth factor –I(IGF-1), are hormonal examples which influence the breast neoplasmatic cell stimulation , in cases of undetectable and predominant lesions.

Family history and genetic predisposition (mutation of Br-Ca 1 and Br-Ca 2) consist the most significant

factors of breast cancer development.[5] During pregnancy, the hormonal interaction is regulated by the function of the placenta. Through this interaction, major indicator of hormonal levels remains the placental weight.[6] Additionally, placental anomalies and alterations can lead to breast cancer development. [7] Classical examples are difficulties in level of implantation, metabolic disorders (preeclampsia, fetal erythroblastosis), mechanical irregulations with the placental (umbilical) cord.

During pregnancy, there is a sensational hormonal increase of estrogens, progesterone and placental galactogen basically delivered by the placenta. [8] This issue reflects a positive relationship between placental weight and estrogen levels.

Through our study, there is an attempt of better understanding concerning the pathophysiologic mechanism us between placental alterations and breast cancer development, unique in Greek current literature.

Discussion

Pregnancy represents an entirely metabolic and hormonal laboratory with plenty interactions. [9] There is an increase of all related pregnancy hormones with classic examples estrogen and progesterone levels. Placenta as supportive pregnancy related organ reflects the main metabolic and hormonal net. [10]

Many studies have been conducted, indicating the correlation of placenta alterations and breast cancer development, an scientific issue not common among the Greek literature. Factors such as weight, size and depiction of the placenta, age of the mother, gestational length, parity, mode of delivery, influence the creation, formation and increase the neoplasmatic cells level inside the breast area. [11]

The analyzed factors were incidence, specificity, sensitivity, positive and negative prognostic value. Regarding the analysis of the breast metaplastic transformation the most significant factors were size of the tumour, histologic type, lymphatic node status and eventual lymphatic infiltration, estrogen and progesterone receptors, cluster of differentiation, p53, B-cl and c-erb2 status.[12]

The impact of estrogens is strongly accompanied with breast cancer development, accounting ten times higher levels.[13] Estradiol is considered more biologically active than estriol.[14] On the contrary, estriol seems to have more positive association with placenta weight.[15]

Cohn et al, reported that low placental weight, small placental diameter, maternal floor infarction of the placenta and elevations in blood pressure between the second and third trimester were associated with relatively strong and independent reductions in maternal risk of breast cancer.[16]

The correlation between placenta weight and breast cancer development is multifactorial. Plenty of metabolic and hormonal factors influence and affect this balance. Despite the increased maternal serum levels of testosterone and alpha-fetoprotein in during pregnancy, in cases of preeclampsia, these serum levels are extremely higher.[17] According to current bibliography, preeclampsia and breast cancer development represent two inversely proportional conditions[18]

The second prognostic metabolic factor consists the presence in maternal serum of insulin-like growth factor, an important factor for breast carcinogenesis. There is a strongly positive correlation of increased insulin-like growth factor levels and placental weight.[19]

In a large Cohort Study, Dunn Wald et al. found that compared with women with ER+/PR+ tumors, women with ER+/PR- , ER-/PR+, or ER-/PR- tumors experienced higher risks of premenopausal breast cancer mortality.[20] This risk increase was largely independent of demographic and clinical tumor characteristics, accounting the highest risk in patients with ER-/PR- tumors.

Lukanova et al. found an increased risk of breast cancer associated with higher concentration of estrogen during first trimester of pregnancy and higher proportion of receptor negative tumors among women diagnosed before age of forty. [21]

Conclusion

Our findings support the hypothesis between placental alterations and breast cancer development. Exploring biological and metabolic mechanism us, predispositional factors and underlying all the current

bibliography, can lead to more feasible observation and decoding. More studies must be conducted in order to establish more accurate and assiduous therapeuting mapping.

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Citation: **Dr. Chrisostomos Sofoudis**. *Placental Alterations and Breast Cancer Development. Still a Myth?. Open Access Journal of Gynecology and Obstetrics. 2018; 1(1): 09-12.*